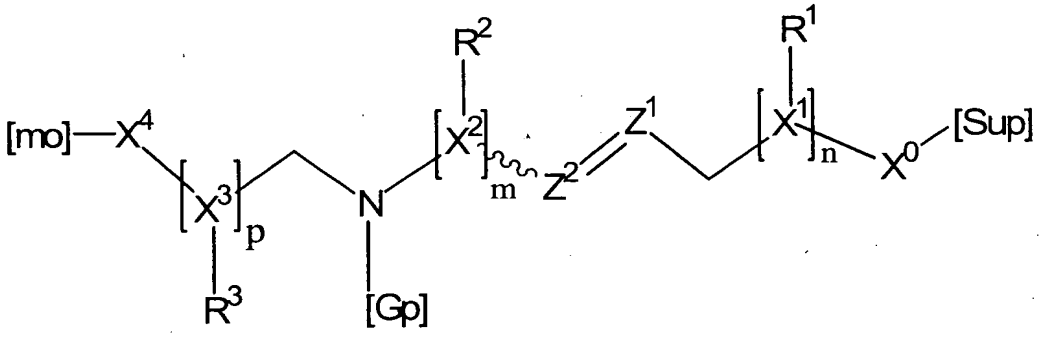
CLAIMS

1. Molecular spacer arm of formula (I) below:



(I)

- in which X^0 and X^4 are substituents which can be modulated so as to allow bonding of [mo] and [Sup] via said spacer arm, X^0 and X^4 being different from H and each being chosen, independently of the other substituents of the spacer arm, from C, O, N, S, Se, P, As and Si; and

- in which the substituents X^1; X^2; X^3; Z^1; Z^2; R^1; R^2; and R^3 are such that:

  - X^1; X^2; and X^3 are each chosen, independently of the other substituents, from C, O, N, S, Se, P, As and Si, and from an aryl and a heteroaryl, each containing from 2 to 20 carbon atoms;
  - Z^1 and Z^2 are each chosen, independently of the other substituents, from C-R, Si-R, C, N, P and As, where R is an alkyl containing from 1 to 40 carbon atoms;
  - R^1; R^2; and R^3 are each chosen, independently of the other substituents, from H, an alkyl, an aryl

and a heteroaryl each containing from 2 to 20 carbon atoms;

- [Gp] represents a group which protects the secondary amine -N- or a molecule which participates in the functionality of the spacer arm;

- in which n, m and p are integers, each greater than or equal to 1 and chosen independently of one another, preferably such that $1 \leq n, m$ and $p \leq 40$;

- in which [Sup] represents H or a silanized solid support to which said spacer arm can be covalently attached; and

- in which [mo] represents H or a molecular unit intended to be covalently attached by means of said spacer arm to said silanized solid support.

2. Spacer arm according to Claim 1, in which

- X^0 and X^4 are chosen, independently of the other substituents, from C, O, N, S and Si; and/or
- X^1; X^2; and X^3 are chosen, independently of the other substituents, from C, O, N, S and Si, and from an aryl and a heteroaryl each containing from 2 to 10 carbon atoms; and/or
- Z^1 and Z^2 are chosen, independently of the other substituents, from C, N, C-R and Si-R, where R is an alkyl containing from 1 to 30 carbon atoms; and/or
- R^1; R^2; and R^3 are chosen, independently of the other substituents, from H, an alkyl, an aryl and

a heteroaryl each containing from 2 to 10 carbon atoms.

3. Spacer arm according to Claim 1, in which the protective group [Gp] is chosen from Ac, benzyl, a C_1 to C_{40} aryl group, Troc, z, TCA, BOC and Fmoc.

4. Spacer arm according to Claim 1, in which the solid support [Sup], when it is present, is chosen from a plate, a bead or a capillary.

5. Spacer arm according to Claim 1 or 4, in which [Sup] is silica-based or glass-based.

6. Spacer arm according to Claim 1, in which [mo], when it is present, is a molecule having a molecular weight ranging from 180 to 400 000 $g.mol^{-1}$.

7. Spacer arm according to Claim 1, in which [mo], when it is present, is chosen from monosaccharides, oligosaccharides, polyoligosaccharides, glycoconjugates, peptides, proteins, enzymes, glycoproteins, lipids, fatty acids, glycolipids and glycolipoproteins.

8. Spacer arm according to Claim 1, in which [mo], when it is present, is a sugar.

9. Use of a spacer arm according to any one of Claims 1 to 8, for attaching a molecular unit [mo] to a silanized solid support [Sup].

10. Use according to Claim 9, in which [mo] is a molecule having a molecular weight ranging from 180 to 400 000 $g.mol^{-1}$.

11. Use according to Claim 9, in which [mo] is chosen from monosaccharides, oligosaccharides, poly-oligosaccharides, glycoconjugates, and natural or synthetic small molecules; and [Sup] represents a silanized solid support to which the spacer arm can be attached.

12. Use according to Claim 9, in which [Sup] is chosen from a plate, beads or a capillary.

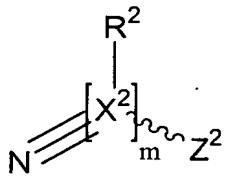
13. Use according to Claim 12, in which [Sup] is silica-based or glass-based.

14. Use according to any one of Claims 9 to 13, for producing a biochip.

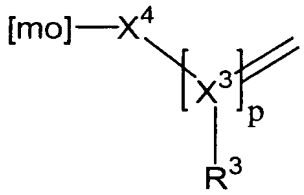
15. Use according to any one of Claims 9 to 13, for producing a glycochip.

16. Process for the covalent attachment of a molecular unit [mo] to a support by means of a spacer arm, said process comprising the following steps:

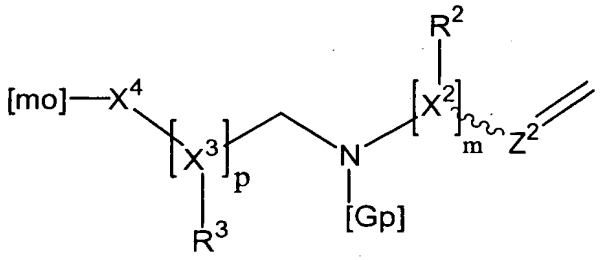
(i) reduction of the nitrile function of a compound of formula:



(ii) formation of an aldehyde function from an allyl function of a biological molecule of formula:

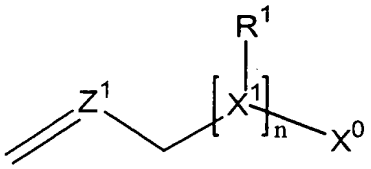


(iii) reductive amination, followed by protection of the secondary amine formed, between said reduced nitrile function and said aldehyde function, so as to obtain a biological molecule which has been activated so as to be attached to the support, said activated biological molecule being of formula:



;

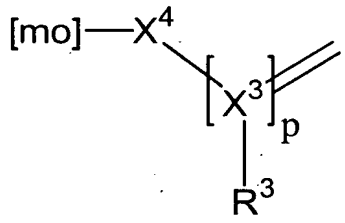
(iv) silanization of a solid support, and functionalization of the silanized solid support with a molecule of formula:



(v) metathesis reaction between the molecule functionalizing the support and the activated biological molecule so as to form a spacer arm according to the invention connecting the biological molecule and the support;

in which process the substituents X^0; X^1; X^2; X^3; X^4; Z^1; Z^2; R^1; R^2; R^3; and [mo] are as defined in Claim 1.

17. Process according to Claim 16, in which the compound of formula



is an allylated sugar, [mo] being said sugar.

18. Process according to Claim 16, in which [Sup] is chosen from a plate, a bead or a capillary.

19. Process according to Claim 16 or 18, in which [Sup] is silica-based or glass-based.

20. Process according to Claim 16, in which [mo] is a molecule having a molecular weight ranging from 180 to 400 000 $g.mol^{-1}$.

21. Process according to Claim 16, in which [mo] is chosen from monosaccharides, oligosaccharides,

polyoligosaccharides, glycoconjugates, peptides, proteins, enzymes, glycoproteins, lipids, fatty acids, glycolipids and glycolipoproteins.

22. Process according to Claim 16, in which [mo] is a sugar.

23. Process according to Claim 16, also comprising a step consisting of attachment of a protective group [Gp] to the secondary amine function.

24. Process according to Claim 23, in which [Gp] is chosen from Ac, benzyl, a C_1 to C_{40} aryl group, Troc, z, TCA, BOC and Fmoc.

25. Use of a process according to any one of Claims 16 to 24, for producing a biochip.

26. Use of a process according to any one of Claims 16 to 24, for producing a glycochip.